**CAROL A. ERIKSON**
**QUALITY ASSESSMENT MANAGER**

## CREDENTIALS

### Education

M.S.P.H., Environmental Chemistry, University of North Carolina, Chapel Hill (1981)
B.S., Environmental Sciences, Rutgers University (1979)
Short Course, "Analytical Strategies for the RCRA Program," at WTQA '99, July 1999.
Short Course, "PBMS and NELAC: Achieving Defensible Data," at WTQA '99, July 1999.
Short Course, "Quality Systems, PBMS and NELAC: Putting It All Together," at WTQA '98, 7/98.
October 1994 - Organic Data Validation; Westchester Community College, New York.
July 1993 - Environmental Applications of GC/MS; Indiana University.

### Professional Societies

American Chemical Society, Member
National Ground Water Association, Member
American Academy of Forensic Sciences, Member

## EXPERIENCE SUMMARY

### 1991 to Present - Quality Assessment Manager, Trillium, Inc.

Compilation, evaluation, and interpretation of site data in preparation for litigation; assistance with preparation of expert reports and affidavits. Excellent technical writing, editing and organization skills.

Expert witness deposition and trial testimony.

Coordination with clients and laboratories for sampling and analysis programs; preparation of sampling plans and project-specific quality assurance plans; recommendations to clients for internal quality assurance program implementation.

Review and validation of CLP-type data packages (Volatile [GC/MS and GC], Semivolatile, Dioxin/Furan, Inorganic, Pesticide, Polychlorinated Biphenyl [PCB], Herbicide, Polynuclear Aromatic Hydrocarbon (PAH), Total Phenols, Total Organic Carbon [TOC], Total Petroleum Hydrocarbon [TPH], and classical chemistry data) in soil, water, tissue, and air samples per EPA's National Functional Guidelines, EPA Regional Guidelines, other agency procedures, and professional judgment, as appropriate.

Consultation, problem solving with regard to laboratory and field operations, analytical methods, sampling procedures, project quality control issues, laboratory and field audits. Highly experienced in analysis of environmental samples according to EPA methodologies (GC/MS and GC).

**1989 to 1991 - Senior Analytical Consultant, Field Analytical Services; IT Corporation, Knoxville, Tennessee**

Responsible for technical oversight of sampling and analytical programs, and implementation of QA/QC procedures, including staff training, development of new business areas for FAS

**1985 to 1989 - Eastern Regional Manager, Field Analytical Services; IT Corporation, Knoxville, Tennessee**

Responsible for day-to-day management of technical staff (up to 20 professionals) in all phases of project involvements. Direct technical responsibilities to large projects requiring analytical and QA/QC support.

**1983 to 1985 - Analytical Project Coordinator; IT Corporation, Knoxville, Tennessee**

Responsible for analytical and QA/QC coordination for environmental assessment and remedial programs.

**1981 to 1983 - Senior GC/MS Operator; Mead CompuChem; Research Triangle Park, North Carolina**

Responsible for accurate review of laboratory-generated data, analysis of non-routine samples, and immediate technical assistance in the gas chromatography/mass spectrometry (GC/MS) lab. Initially hired as an operator, responsible for accurate and expeditious analysis of water and soil samples for Environmental Protection Agency (EPA) priority pollutants by GC/MS according to Contract Laboratory Program (CLP) requirements.

## FIELDS OF COMPETENCE

### Environmental Chemistry

Evaluated analytical data for dioxins/furans in fly ash by Method 23 to confirm accuracy of laboratory-reported results. Researched possible sources of dioxins and furans in incinerator fly ash and prepared letter report to assist client in meetings with the State regarding emissions.

Provided consulting services to a national corporation in support of site investigation and remediation work performed at a facility in Georgia, including investigation of anomalous toluene results in soil samples analyzed for volatile organics and oversight of all sampling and analytical work done in support of the remediation program.

Worked with national company to verify sampling and analysis procedures for process waste, including validation of PCB congeners data generated at plant laboratory (EPA 680) and at a reference laboratory (EPA 1668A).

Evaluated laboratory data for ignitability of a solid waste sample and researched the referenced and available analytical methods. Summarized findings to assist the client in countering Agency classification of the site as hazardous based on this result.

Designed a sampling and analytical program to establish or refute a connection between plant operations and local ground water contamination at a site in Rhode Island. Identification of tentatively identified compounds from the semivolatiles analyses proved key to understanding the contaminant plume.

Worked with steel company to investigate sources of lead in automobile shredder residue. Audited analytical laboratory to confirm sample preparation and analytical procedures. On-going work to monitor lead and PCBs in shredder residue and documentation of a monitoring program.

Researched and prepared report summarizing the pros and cons related to the use of n-propyl bromide as an alternative to trichloroethene as a vapor degreaser.

Helped develop sampling and modified analytical protocols for a site investigation in Columbia, South Carolina. Communicated with sampling team and analytical laboratory during sample collection, forensic chemistry, interpretation of mass spectra for TICs, and validation of analytical data generated from sampling efforts.

Documented a custom analytical method for detecting low concentrations of PAHs in soil from a site in Cincinnati, Ohio and preparation of documents explaining the usability of pesticide, PCB and polynuclear aromatic hydrocarbon data generated from site samples by various laboratories.

Provided oversight to a laboratory corrective action effort involving the recalculation of a large quantity of volatile organics data; attended meetings with clients of the laboratory to explain the effect of the corrections on sample data.

Helped to design and implement corporate-specific Chain-of-Custody and Request-for-Analysis forms.

Developed, initiated, and supervised site-specific sample collection and data management procedures, including computer database and on-site mobile laboratory, for emergency response and remediation support to a large and diverse chemical spill in Pine Bluff, Arkansas. Direct interface with state environmental agency to resolve technical issues.

## Quality Assurance/Quality Control

Audited two water quality laboratories in New York, pursuant to National Environmental Laboratory Accreditation Conference (NELAC) and New York State Department of Health Environmental Laboratory Approval Program (ELAP) standards, including review of Quality Assurance Plans and Standard Operating Procedures, on-site facility evaluations, and on-site review of analytical data.

Provided consulting services to a national corporation in support of site investigation and remediation work performed at a facility in Georgia, including compilation of investigation-phase quality control data, preparation of the quality control discussion for the final report and the Quality Assurance Project Plan (QAPP) in support of subsequent remedial-phase work, performance of a laboratory audit, procurement of site-specific, custom-made performance evaluation samples, performance of a field audit on the first day of the remedial sampling program, and preparation of the quality control discussion for the final report to the state agency.

Implemented quality control (QC) program in support of sampling and analyses performed for a major Superfund site investigation in Newark, New Jersey, including development of job-specific sample coding,

documentation, and tracking procedures, compilation of analytical data, and report preparation. Also, coordinated technical support to data quality audit issues raised by NJDEP with regard to sample analyses for 2,3,7,8-TCDD, including formal presentations of summary QC data to the agency and client.

Assisted with development of a sampling and QC plan for a building contamination project (PCBs) in Tulsa, Oklahoma. Coordinated laboratory analyses, compiled results as received, and issued reports to project management.

Established and supervised job-specific analytical and QC procedures for a dedicated on-site laboratory in Baton Rouge, Louisiana. Primary responsibility for review of laboratory-generated data, report preparation and issue, quality assurance audits, conformance to Louisiana Department of Environmental Quality (LDEQ) directives, and corrective actions as required.

Guided analytical staff to improve and maintain performance in compliance with USATHAMA Quality Assurance Program for explosives and metals analyses in support of hazardous waste incineration program. Full responsibility for technical oversight of analytical operations.

## Data Validation

Validation of PCBs data for over 1400 soil samples and volatile organics, semivolatile organics, and metals data for over 200 soil samples collected and analyzed in support of a remediation program at a site in Georgia (EPA National Functional Guidelines for Data Validation).

Validation of PCBs data for over 1000 soil/sediment/wood samples, volatile organics, semivolatile organics, metals, and dioxin/furan data for up to 250 soil/sediment samples, and PCBs, volatile organics, and semivolatile organics for over 30 ground water samples in support of investigation and remediation efforts at various residential and commercial sites in Georgia (EPA National Functional Guidelines for Data Validation).

Validation of quarterly monitoring data from a sanitary landfill in Indiana from 1998 through 2000, including Appendix IX dioxins and furans in leachate samples by Methods 8280A and 8290.

Validation of quarterly analytical data (volatile organics, metals and wet chemistry in groundwater) generated in support of a long-term monitoring program at a landfill site in Indiana. (EPA National Functional Guidelines for Data Validation).

Validation of all analytical data generated in support of a RI/FS performed at a Superfund site in Moira, New York. Parameters included volatile and semivolatile organics, metals, pesticides/PCBs, total phenols and wet chemistry in soil, sediment, water and biota matrices. (EPA Region II Validation Standard Operating Procedures [SOPs]).

Validation of analytical data (volatile organics and metals in soil, treated soil, water, and air) in support of a thermal treatment remediation program at a site in South Cairo, New York (EPA Region II Validation SOPs).

Developed procedures for validation of CLP and "CLP-like" data prepared in support of DOE's Hazardous Waste Remedial Actions Program (HAZWRAP). Designed worksheets for documentation of validation findings and trained FAS staff to perform thorough reviews.

## Litigation Support/Expert Witness

Researched methods for analysis of anabolic steroids in nutritional supplements and reviewed analytical data on behalf of a supplement manufacturer involved in litigation with respect to the alleged presence of steroids in their product. Prepared questions for deposition of experts for the opposing party. Assisted in preparation of expert report detailing significant deficiencies with the analytical data relied on by the opposing party.

Compiled historical and RI/FS analytical data and reviewed reports on behalf of a large corporation involved in litigation with respect to the source, size and timing of a contaminant plume. Used evidence of smear zones and historical water table fluctuations to establish a window of time during which the release likely occurred and prepared expert report of findings.

Obtained and reviewed raw data for sample analyses performed in support of a petroleum hydrocarbon investigation at a site in Michigan, and reviewed historical and current site investigation documents on behalf of a large petroleum corporation involved in litigation with respect to the source of the contamination. Prepared questions for deposition of opposing parties as well as several affidavits and expert reports, and designed a sampling program to obtain additional site-related data.

Compiled and evaluated historical and RI/FS sample data and reports for preparation of an expert affidavit on behalf of a group of clients involved in litigation with respect to a large Superfund site in Rhode Island. Provided additional consulting services to individual clients from the group, including review of tentatively identified compounds (TICs) for process-related compounds and comparison of metals concentrations at the site to appropriate background levels.

Compiled and evaluated historical and RI/FS sample data and reports for preparation of an expert affidavit in behalf of a group of clients involved in litigation with respect to a large Superfund site in New York.

## Deposition and Trial Testimony

Deposed July 20, 1993, Docket #3-89-881
U.S. District Court, Eastern District of Tennessee Northern Division
IT Corporation vs. Maxus Corporate Co.

Testified at Trial on August 16, 1993, Docket #3-89-881
U.S. District Court, Eastern District of Tennessee Northern Division
IT Corporation vs. Maxus Corporate Co.

Testified at Trial on August 12, 2004, Docket #03-321 (1)
U.S. District Court, Eastern District of Pennsylvania
United States of America vs. Edward V. Kellogg

## PUBLICATIONS

Master's Thesis, "Organic Reaction Products of Chlorine Dioxide and Natural Aquatic Fulvic Acids," University of North Carolina, Chapel Hill, North Carolina, December 1981.

Colclough, C.A. (Mrs. Carol A. Erikson), J.D. Johnson, R.F. Christman and D.S. Millington, 1983; "Organic Reaction Products of Chlorine Dioxide and Natural Aquatic Fulvic Acids," in Water Chlorination: Environmental Impacts and Health Effects, Vol. IV, also presented at the Fourth National Conference on Water Chlorination, Asilomar Conference Center, Pacific Grove, California, October 1981.

Erikson, Carol A., *Analysis of Volatile Organic Compounds in Soil - Revisited*, 55th Annual Meeting, American Academy of Forensic Sciences, Chicago, Illinois, February 17-22, 2003.

Erikson, Carol A., *Dialkyl Disulfides: Another Diagnostic Tool for Petroleum Products in the Environment?*, 57th Annual Meeting, American Academy of Forensic Sciences, New Orleans, Louisiana, February21-26, 2005.

Erikson, Carol A., *Lessons Learned from a Typical Site Investigation*, 4th annual NGWA Ground Water and Environmental Law Conference, Chicago, Illinois, July 6-7, 2006.

Erikson, Carol A., *So You Didn't Think You Needed to "Dot that I"?*, 2007 NGWA Ground Water and Environmental Law conference, Dublin, Ohio, July 24-25, 2007.

Smith, James S., Becky L. Jolin, and Carol A. Erikson, *Automobile Shredder Residue: Waste or Wasted Resource?*, 2007 NGWA Ground Water and Environmental Law conference, Dublin, Ohio, July 24-25, 2007.